

Abstract Submitted  
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**Photo-reduction on the rupture of disulfide bonds and the related protein assembling**<sup>1</sup> WEI WANG, Nanjing University — It has been found that many proteins can self-assemble into nanoscale assemblies when they unfold or partially unfold under harsh conditions, such as low pH, high temperature, or the presence of denaturants, and so on. These nanoscale assemblies can have some applications such as the drug-delivery systems (DDSs). Here we report a study that a very physical way, the UV illumination, can be used to facilitate the formation of protein fibrils and nanoparticles under native conditions by breaking disulfide bonds in some disulfide-containing proteins. By controlling the intensity of UV light and the illumination time, we realized the preparation of self-assembly nanoparticles which encapsulate the anticancer drug doxorubicin (DOX) and can be used as the DDS for inhibiting the growth of tumor. The formation of fibrillary assemblies was also observed. The rupture of disulfide bonds through photo-reduction process due to the effect of tryptophan and tyrosine was studied, and the physical mechanism of the assembling of the related disulfide-containing proteins was also discussed.

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